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“ Let $a + b$ = heat given out by ammoniacal gas when absorbed by water, a representing the heat of *compression*, and b that of the chemical action between compressed or liquid ammonia and water. When ammoniacal gas is passed into liquid muriatic acid, the heat represented by b will be wanting, and that actually developed will be $a + c$, c being the chemical heat determined by Andrews. The difference of these, therefore, or $a + c - (a + b)$, will be $c - b$. But this difference we have actually found to be greater than c . b must, therefore, have a negative sign ; or, in other words, when *compressed* ammonia is brought into contact with water, *cold*, not heat, is the result.

“ This may appear a very paradoxical supposition, but I am not aware of any fact which would prevent us from entertaining it; and the great expansion which water experiences when absorbing ammoniacal gas, even confers upon it some degree of probability. I may add, that this view of the matter gives us 239° as the value of b , and suggests an experiment, which, though difficult, it would not be impossible to perform, and the result of which would at once elucidate completely the subject under consideration.”

The Rev. Dr. Todd exhibited an ancient Irish brooch, belonging to the Rev. Richard Butler, of Trim.

Mr. Petrie having been called on for his opinion respecting the style, workmanship, and age of this beautiful relic of antiquity, stated, that he considered it as the most elegant specimen of Irish workmanship *in silver* which he had hitherto seen, but believed its age to be not so great as that of most, or perhaps any, of the brooches in the Museum of the Academy, or the other collections in Dublin ; its minor ornaments being peculiarly those characteristic of the early portion of the twelfth century, to which period he referred it ; though

the type of many of its general forms might be found in earlier examples.

Mr. Petrie then proposed that the thanks of the Academy should be given to the Rev. Richard Butler, for his kindness in sending this brooch for the inspection of the Meeting. The thanks of the Academy were accordingly voted to Mr. Butler.

Mr. Ingram read the following note on certain Properties of the Surfaces of the Second Degree.

“ Mr. Salmon, Fellow of Trinity College, has given a mode of generating certain of the surfaces of the second degree, which is in a remarkable way supplementary to the *modular* method of Professor Mac Cullagh, and which has been called, for distinction’s sake, the *umbilicar* method. In it the surface is had as the locus of a point moving so that the square of its distance from a fixed point is proportional to the rectangle under its distances from two fixed planes. Out of this generation arise many highly interesting properties of the surfaces in question, to some of which it is the object of the present communication to call the attention of the Academy.

“ The fixed point is called the Focus of the surface, the two fixed planes the Directive Planes, and their line of intersection the Directrix.

“ 1. Two right lines, reciprocal-polars with relation to the surface, meet a directive plane in two points such that the vectors drawn to them from the focus are at right angles.

“ 2. A similar theorem holds for two conjugate tangents at any point of the surface.

“ 3. Two right lines, reciprocal-polars with relation to the surface, seen from the pole of a directive plane, appear to cut at right angles.

“ 4. Let a cone be described, passing through two plane sections of the surface; it will intersect a directive plane in a certain conic: let a second cone be described, passing through